

REMARKS**In the Claims**

Applicants respectfully request that this amendment be entered, and that their subject U.S. Patent application be passed to issuance in view thereof. Applicants respectfully submit that the amendments to claim 1 more clearly define Applicants' invention and does not require further search by the Examiner.

Accordingly, claims 1-10 are pending in the subject application. It is respectfully requested that the pending claims 1-10 be reconsidered and passed to issuance in view of this response.

Claim Rejections

In the Office Action, pending claims 1-5 and 7 stand rejected under 35 U.S.C. 102 in view of the Cunningham reference, U.S. patent 6,177,697 B1 (the '697 patent), as previously applied. In response, Applicants respectfully submit that this reference, taken alone or in combination with any other reference of record, neither teaches nor suggests the invention as recited in the claims as presented herein.

In the invention, a trench having a depth approximating that of the isolation trenches is used to store charge (i.e. trench capacitor) and electrically isolate (i.e. isolation trench) adjacent memory cells. The invention discloses a single trench to perform the functions of a capacitor and isolation trench in each memory cell so that memory cell area can be reduced. The invention does not require a separate isolation trench in each memory cell to provide cell-to-cell isolation. Thus, according to the invention, adjacent memory cells can be "... located in a second region of the semiconductor substrate in which said plurality of isolation filled trenches are absent ...".

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This is neither shown nor suggested by the '697 reference. If anything, the '697 reference teaches away from the combination of features recited in claim 1, as amended. In the '697 reference, each memory cell includes an isolation trench 10 and a capacitor trench 14. Thus, each memory cell is formed in the same region as the isolation trench 10 (see FIG. 1) since the isolation trench 10 is required within each memory cell for cell-to-cell isolation. Claims 1, 10 and 12 of the '697 reference also disclose that an isolation region is required in the same region as adjacent memory cells for cell-to-cell isolation in addition to the capacitor trench. The '697 reference does not disclose a trench that performs the functions of storing charge and isolating adjacent memory cells. In the '697 reference, two structures (i.e. isolation trench 10 and capacitor trench 14) are required in each memory cell to perform the functions of storing charge and isolating adjacent memory cells. Since isolation trench 10 is required in the same region as each memory cell, total cell area is increased. The '697 reference is a divisional of the 6,087,214 Cunningham reference discussed and distinguished in paragraphs 6 and 7 of the present specification. Accordingly, Applicants respectfully submit that the rejection of claims 1-5 and 7 as being anticipated by the '697 reference has been traversed.

In the Office Action, claims 6 and 9 stand rejected under 35 U.S.C. 103 in view of a combination of the teachings of the '697 patent and U.S. patent 5,183,774 ("Satoh"), as previously applied. In response, Applicants respectfully submit that the Satoh reference, taken alone or in combination with any other reference of record, neither teaches nor suggests the invention as recited in these claims.

Applicants respectfully submit that the aforementioned shortcomings of the teachings of the '697 patent are not addressed by the Satoh reference. As the Examiner expressly states in the Final Office Action of April 2, 2004, the Satoh reference is relied upon for teaching the thickness of the insulating material at the bottom wall of the plurality of holes is thicker than the thickness of the insulating material at the sidewall of the plurality of holes. Thus, Satoh does not remedy

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the deficiencies of the '697 patent as described above. Accordingly, Applicants respectfully submit that the rejection of record to claims 6 and 9 has been traversed.

In the Office Action, claims 8 and 10 stand rejected under 35 U.S.C. 103 in view of a combination of the teachings of the '697 patent and U.S. patent 6,437,369 ("Tang"), as previously applied. In response, Applicants respectfully submit that the Tang reference, taken alone or in combination with any other reference of record, neither teaches nor suggests the invention as recited in these claims.

Applicants respectfully submit that the aforementioned shortcomings of the teachings of the '697 patent are not addressed by the Tang reference. As the Examiner expressly states in the Final Office Action of April 2, 2004, the Tang reference is relied upon for teaching that the depth of the holes are greater than the plurality of isolation-filled trenches; the substrate has a buried insulation region; and, a plurality of holes that extend into the buried insulation region. Thus, Tang does not remedy the deficiencies of the '697 patent as described above. Accordingly, Applicants respectfully submit that the rejection of record to claims 8 and 10 has been traversed.

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CONCLUSION

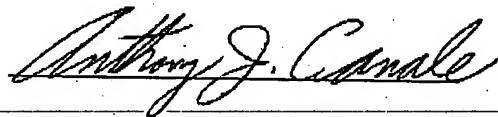
In light of the foregoing amendments and remarks, all of the claims now presented are believed to be in condition for allowance, and Applicants respectfully request that the outstanding rejections be withdrawn and this application be passed to issue at an early date.

The Examiner is urged to call the undersigned at the number listed below if, in the Examiner's opinion, such a phone conference would aid in furthering the prosecution of this application. Applicants do not believe that any fee is due for the submission of this amendment. However, the Patent Office is hereby authorized to charge Applicants' Deposit Account 09-0456 such fees as may be due for the entry and consideration of this amendment.

Respectfully Submitted,

For: Brown et al.,

By:



Anthony J. Canale
Registration No. 51,526
Agent for Applicants
Phone: (802) 769-8782
Fax: (802) 769-8938
Email: acanale@us.ibm.com

IBM Corporation
Intellectual Property Law - Zip 972E
1000 River Street
Essex Junction, Vermont 05452

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